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CASE REPORT

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Surgical management of agenesis of the vulva with atresia ani-et-distal recti in a heifer calf: A case report

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ABSTRACT

Successful surgical intervention of atresia ani-et-distal recti with agenesis of vulva in a heifer calf is reported in this paper. The calf aging 1-day was presented with a history of swelling at the perineal region. In clinical examination, both vulval and anal openings were found absent. Initial surgical operation under sedation and local anesthesia was done to correct these abnormalities. As a result, the calf could urinate, but attempted defecation was not successful. Surgical operation was done again at the anal region to resolve this condition. Post-operatively, tetracycline spray was applied on both surgical wounds immediately after surgery, and repeated twice daily for 10 days. Amoxicillin trihydrate (at 750 mg/kg bwt) and Phenylbutazone (at 400 mg/kg bwt) were administered intramuscularly once, and the treatment was repeated on every alternate day up to 10 days of post-surgery. Finally, the calf was able to urinate and defecate normally, and the surgical wounds healed uneventfully within 14 days.

Keywords

Agenesis, Atresia ani-et-distal recti, Congenital malformation, calf

ARTICLE HISTORY

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INTRODUCTION

There are various congenital defects in domestic animals; the condition can be of genetic or non-genetic origin, and can involve an organ or part of the body (Krishna et al., 2009). Imperforated anus (also known as atresia ani) is the failure of the anal membrane together with the perineal skin to break down during development; this can occur alone or in association with other defect. Atresia ani may develop when a dorsal part of the cloacal plate fails to form. It is most frequently encountered in the pig than any other species, though it has been reported in calves (Nagaraja et al., 2001; Ghanem et al., 2004). When the rectum ends blindly in a cul-de sac a short distance cranial to the anal membrane, then the condition is called rectal atresia (Abouelnasr et al., 2012).

The anomalies affecting the vulva and urethra are rare (Krishna et al., 2009). Failure of the differentiation of cloacal folds into anal and urogenital folds results in the malformation of the anus and vagina, while that affecting the cranial part of the pelvic urogenital sinus will result in agenesis of the terminal urethra in the female (Noden and deLahunta et al., 1985). This paper reports a rare case of atresia ani et recti together with agenesis of the vulva in a heifer calf and its surgical management.

CLINICAL HISTORY AND FINDINGS

A day old heifer calf was presented to the Large Animal Clinic, University of Nairobi with the history of absence of anal and vulval openings. The calf had an alert demeanor and was fairly active. Clinical examination confirmed the absence of anal and vulval openings. A tubercle like structure was visible at the ventral aspect where the normal vulval lips were supposed to be. There was also an elongated swelling extending dorsally up the perineum, measuring 4-cm in diameter and 6-cm in length (**Figure 1 and 2**). Catheterization using a urinary catheter (3.3 × 500 mm, 10 FG) through the tubercle's tiny orifice was attempted without any success. It was therefore

decided for a surgical operation aiming of create and maintain a functional patency of both rectal and vulvular openings.

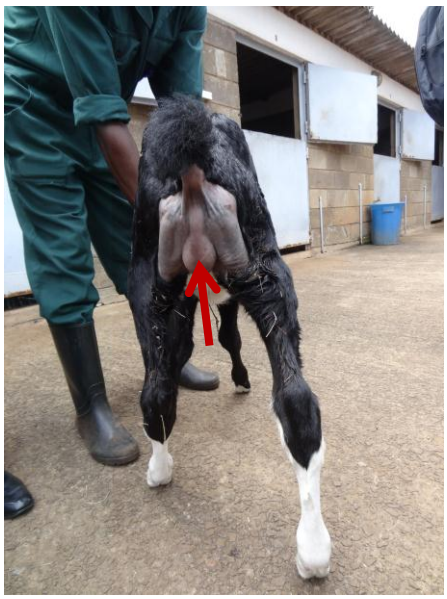

Figure 1: Calf after shaving showing perineal swelling (arrow) and the absence of anal opening.

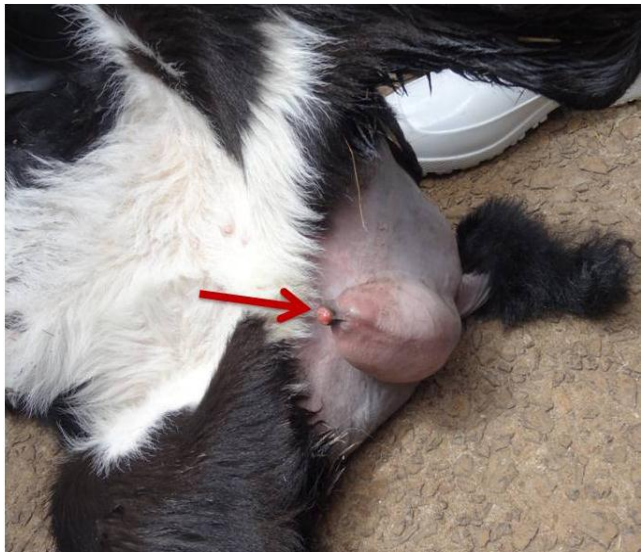

Figure 2: Calf on lateral recumbency showing the tubercle ventral to the swelling (arrow).

SURGICAL MANAGEMENT AND THE OUTCOME

The perineal region was prepared for aseptic surgery, and the calf was held on dorsal recumbency following sedation with 2% Xylazine Hydrochloride (Bomazine 2%, Bomac Laboratories Limited, Auckland-New Zealand) dosed at 0.1 mg/kg bwt, intramuscularly. Locally, subcutaneous infiltration using 2% Lignocaine Hydrochloride (Lidocaine, Mac Pharmaceuticals Limited, Nairobi-Kenya) was done at the perineal region below the tail and around the perineal swelling.

Firstly, an elliptical incision was made using a scalpel blade at the most dependent part of the vulval swelling, and the skin was undermined and removed. The connective tissue surrounding the swelling was incised to gain entry into the cavity. After draining the sero-mucoid fluid, the incision was extended more proximally towards the perineum using mayo scissors where vaginal mucosa was observed. The vaginal mucosa was sutured onto the skin using nylon No. 1 in a simple interrupted suture pattern.

Secondly, a circular incision was made on the skin, just below the tail at the expected location of the anus. The skin flap was undermined and removed. Initial examination revealed absence of swelling or bulging that could have indicative the location of the rectum. Therefore, after blunt dissection using mayo scissors, what seemed to be the rectal mucosa, was sutured onto the skin using nylon No. 1 in a simple interrupted suture pattern (**Figure 3**).

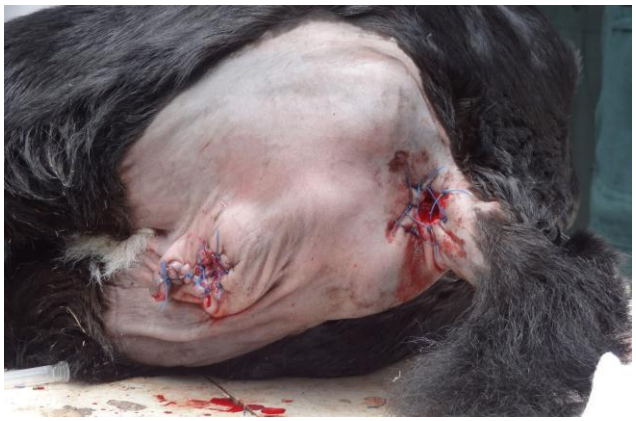

Figure 3: The sutured anal and vulval wounds after surgical intervention.

Immediately after operation, tetracycline spray was applied on both surgical wounds. Besides, Amoxicillin trihydrate (Betamox® Norbrook Veterinary Pharmaceuticals, Nairobi-Kenya) at 750 mg/kg bwt, and Phenylbutazone (Butamic® Fenibutazone 20%, Laboratories Microsules, Uruguay SA) at 400 mg/kg bwt were administered once intramuscularly. After 6 h of the surgery, the calf was fed on 1.5 L of milk; this was repeated 2 times, 6 h apart.

Twenty-four hours post-operatively, during the clinical review, the calf was observed to be straining and with a dull demeanor. It was noted that it had not defecated

since the surgery. Straw colored urine was seen on the floor, which was suggestive of a successful micturition. On rectal examination using a finger lubricated with liquid paraffin, the anal opening made from the previous surgical intervention was found to be ending blindly. Furthermore, there was yet another swelling intra-pelvic pushing towards the perineum with each attempted straining. In addition, it was established that the swelling was not communicating with the urogenital tract. A decision was made to perform an emergency surgery to relieve the straining and allow defecation.

While under sedation and local anesthesia as earlier described, digital manipulation using the index finger was able to breakdown the connective tissue surrounding the rectum and with the aid of a pair of allis tissue forceps the rectum was exteriorized. A sharp incision using a surgical blade was made into the distal end of rectum while holding the two allis tissue forceps. On penetrating the rectal, wall gas and meconium were released and the calf relieved immediately. Rectal mucosa was re-sutured onto the skin in a simple interrupted suture pattern, using nylon No. 1 suture.

Post-operatively, tetracycline spray was applied on both surgical wounds immediately after surgery and repeated twice daily for 10 days. Besides, Amoxicillin trihydrate (at 750 mg/kg bwt) and Phenylbutazone (at 400 mg/kg bwt) were administered intramuscularly once and repeated on alternate days for 10 days. The calf was able to urinate and defecate normally while the surgical wounds healed uneventfully within 14 days.

DISCUSSION

Atresia ani-et-distal recti with agenesis of vulva is a rare condition with only 2 previous reports; one in a buffalo calf (Krishna et al., 2009) while the other was reported in 3 calves in India (Gamal , 2006). To the best of our knowledge, none has been documented in Africa. The three calves reported by Gamal (2006) presented with the following clinical signs: the first day old calf had neither passed meconium nor urine but there was no reported swelling; the second passed a thin stream of fluidy meconium via a pin point orifice of the vulva, suggesting a recto-vaginal fistula; while the third one presented with a thin stream of urine during straining from a narrow (vulval) orifice (Gamal, 2006). In this case, there was a complete obstruction of both urine flow and meconium, with an accumulation of urine in a perineal swelling. In addition, there was no evidence of patent urogenital orifice, but rather a tubercle with a tiny opening that had a blind end. There was no communication evident between the tubercle and the perineal swelling on catheterization or even during surgery.

While the past reports revealed complete recovery following successful reconstruction of both anus and vulva (Gamal, 2006; Krishna et al., 2009), in this case the first surgical operation was only successful regarding establishing urine flow. The calf was still unable to pass feces and presented with straining on the day following the operation. This was due to failure to correctly locate the rectum. The calf had not fed and therefore there was no characteristic swelling of the anal area that helps in identifying the site of the surgery. Surgery for atresia ani et recti should then be delayed until there is evidence of the anal swelling to avoid a repeat surgery.

Also, the calf took 2 days of feeding on milk regularly to fill the rectum and exhibited the clinical signs of straining and depression. This was therefore the period for the rectal obstruction to manifest pain clinically, which necessitated the second anal surgery. Other clinical signs of atresia ani included anorexia and abdominal distention (Surthar et al., 2010), but these were not seen in this case, most probably due to the early surgery to correct the condition.

Reports by Krishna et al. (2009) attributed atresia ani or atresia recti to chromosomal abnormality. A report by Krishna et al. (2009) also implied that imperforate anus was due to the retention of the anal portion of the cloacal membrane, while the failure of rupture of the urogenital membrane could result to atresia of the vagina and/or vulva. This was not investigated in this case, but the congenital nature of the condition suggested a similar cause.

The cloaca embryonically serves as a terminus for both the urinary and digestive systems. The growth of the urorectal septum caudally separates the cloaca into dorsal and ventral chambers so that the dorsal portion forms the anal folds while the ventral portion forms the urogenital folds (Krishna et al., 2009). In this case, both rectal and urogenital tracts had differentiated with expulsion of urine alone following surgery on the initial perineal swelling. Catheterization after surgery, also established a patent urogenital tract. In addition, there was no communication between the rectum and vagina via a recto-vaginal fistula, a common feature in female calves with atresia ani (Gamal, 2006).

Definitively, the urogenital folds form the labia of the vulva while the urogenital sinus opens to form the urogenital orifice (Krishna et al., 2009). Following the

initial surgery on the perineal swelling, the outline of the labia of the vulva was visible once the skin tension had eased. In addition, there was presence of the tubercle with a blind ending tiny opening. This, therefore, appeared to be a case of malformation of the vagina with agenesis of the terminal urethra as described by Noden and deLahunta (1985).

CONCLUSION

Although, atresia ani-et-distal recti with agenesis of the vulva are a rare condition, it can occur in day old heifer calf. Surgical management should aim at creating and maintaining functional rectal and vulvular patency. However, post-prandial rectal swelling can aid in guiding the anal incision, and hence avoid repeated surgery as happened in this case. It is therefore recommended that surgery can be performed few days after parturition to allow feeding hence accumulation of rectal contents.

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